

ABSTRACT

A coreless linear motor having a high rigidity, a high heat radiation effect, and a light weight is provided. The coreless linear motor includes a fixed member and a movable member moving relative with respect to the fixed member.

The fixed member has a yoke (51, 151) and groups of permanent magnets (60) arranged in the yoke. The movable member (2) has a coil assembly (3, 30). The groups of permanent magnets (60) include first and second groups of permanent magnets (60A and 60B) arranged so as to face each other. Each of the first and second groups of permanent magnets has a plurality of magnets along a longitudinal direction of the yoke. In the plurality of magnets, magnetic poles of magnets facing along the longitudinal direction of the yoke alternate. Magnetic poles of the permanent magnets along the longitudinal direction of the yoke are the same. The coil assembly (3, 30) has at least three coils (3A, 3B, 3C) arranged movably relative to the first and second groups of permanent magnets (60A, 60B) along the longitudinal directions (A1, A2) of the yoke between the first and second groups of permanent magnets (60A, 60B), coils are arranged and wound in multiple layers in a solid state and fastened by a binder, and end surfaces of adjacent coils are connected via electrical insulation members. Preferably, a reinforcing member (20, 120) is

provided as a non-magnetic member fit in the solid portions of the coils.